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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,323	12/10/2001	Bruce Cole	Juniper-1 (JNP-0031)	1492

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EXAMINER

NG, CHRISTINE Y

ART UNIT PAPER NUMBER

2663

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/014,323	Applicant(s) COLE ET AL.	
	Examiner Christine Ng	Art Unit 2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-10 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,049,524 to Fukushima et al.

Referring to claims 1 and 8-10, Fukushima et al disclose in Figure 2 a router having a designating routing facility (route calculation unit 11a) and a standby routing facility (route calculation unit 11b) for processing information related to routing. Refer to Column 5, lines 53-59. The method comprises:

a) Executing, with the designated routing facility, a routing protocol (shortest path first SPF algorithm) to generate network topology information. Route calculation unit 11a determines least cost paths in the network using the link-state database 22 and registers the shortest paths in the routing table 19. Refer to Column 6, lines 50-60.

b) Providing a copy of network topology information generated (none) by, and/or network state information received (network link-state information) by, the designated routing facility to the standby routing facility. "Network link-state information that the route calculation unit 11a received from the routers 30 is first held in the route calculation unit 11a and further sent through the internal bus 12 to the route calculation unit 11b" (Column 7, lines 34-38).

c) Executing, with the standby routing facility, a routing protocol (SPF algorithm) based on the network information (network link-state information) provided by the designated routing facility, but such that signaling from the standby routing facility to external nodes is suppressed. After receiving the network link-state information from the route calculation unit 11a, route calculation unit 11b fetches data from its link-state database 22, performs route calculations using SPF, and holds routing tables with the same content as route calculation unit 11a. Refer to Column 7, lines 39-45. Route calculation unit 11b does not exchange routing packets through forwarding process units 13 until switchover has occurred. Refer to Column 7, lines 30-34 and lines 46-52 and Column 9, lines 6-37.

Referring to claim 3, Fukushima et al disclose in Figure 2 that the routing protocol is a link state routing protocol (SPF algorithm). Refer to Column 1, lines 16-30 and Column 6, lines 50-60.

Referring to claim 4, Fukushima et al disclose in Figure 2 that the act of providing a copy of network topology information is effected by having the designated routing facility flood such information onto a local area network (internal bus 12) within the router. Refer to Column 7, lines 34-38 and Column 9, lines 6-10.

Referring to claim 5, Fukushima et al disclose in Figure 2 that the method further comprises: d) if a failure of the designated routing facility is determined, then electing the standby routing facility as the designated routing facility. Refer to Column 7, lines 46-52.

Referring to claim 6, Fukushima et al disclose in Figure 2 that the act of electing includes having the standby routing facility assume identification information of the failed designated routing facility. Refer to Column 7, lines 46-52. When there is a switchover, other routers 30 "do not regard the multiplex router 10 as having run into a failure nor do they rewrite the routing tables they hold..." (Column 8, lines 15-21).

Referring to claim 7, Fukushima et al disclose in Figure 2 that the designated routing facility and the standby routing facility share a common forwarding facility (forwarding process units 13). Refer to Column 7, lines 30-52.

Referring to claim 29, Fukushima et al disclose in Figure 2 that the router further comprises: c) means (state monitor module 20 in route calculation unit 11b) for electing the standby routing facility as the designating routing facility if a failure of the designated routing facility is determined. Refer to Column 8, lines 45-54.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 6,049,524 to Fukushima et al in view of U.S. Publication No. 2002/0021675 to Feldmann.

Fukushima et al do not disclose that the routing protocol is the IS-IS protocol.

Feldmann disclose that an autonomous system AS typically employs an intradomain routing protocol, such as IS-IS, to select paths across the backbone. The routers use the IS-IS protocol to exchange link-state information and compute the shortest paths in the network. This information is used to construct a forwarding table. Refer to Sections 0022 and 0032. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the routing protocol is the IS-IS protocol, the motivation being that the IS-IS protocol is a typical intradomain routing protocol used to create forwarding tables.

5. Claims 11-13, 15-19, 20-28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,049,524 to Fukushima et al in view of U.S. Patent No. 6,347,085 to Kelly.

Referring to claim 11, 16, 18 and 19, Fukushima et al disclose in Figure 2 a router having a designated routing facility (route calculation unit 11a) and a standby routing facility (route calculation unit 11b). Refer to Column 5, lines 53-59. The method comprises:

a) Informing an external node (router 30) that the router has redundant routing facilities. The router with two route calculation units 11a,11b is referred to as the "multiplex router device" to distinguish it from other routers 30. Refer to Column 5, lines 40-49.

c) Providing, with the designated routing facility, network information to the external node. Before switchover, route calculation unit 11a sends a routing table to routers 30 through forwarding process units 13. Refer to Column 7, lines 39-52.

d) Providing, with the standby routing facility, network information to the external node. After switchover, route calculation unit 11b exchanges routing protocol packets with routers 30 and sends a routing table to routers 30 through forwarding process units 13. Refer to Column 7, lines 39-52.

Fukushima et al do not disclose: b) informing an external node (router 30) of the identify of the designated routing facility.

Kelly discloses a method of allowing communication between a packet-switched data network and a circuit-switched data network, wherein a telephone number is resolved into the IP address of a gateway. Using the gateway IP address, a calling party can direct packets from a PSTN network to an IP network, and vice versa. The calling party is also provided with a list of IP address of other redundant, alternate gateways through which to route packets in case the primary gateway fails. Refer to Column 2, lines 49-53; Column 3, line 52 to Column 4, line 12; and Column 17, lines 21-34. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include: b) informing an external node of the identify of the designated routing facility, the motivation being so that the external router knows which routing facility to use to route packets.

Referring to claim 12, Fukushima et al disclose in Figure 2 that the designated routing facility and standby routing facility share a common forwarding facility (forwarding process units 13). Refer to Column 7, lines 30-52.

Referring to claims 13 and 17, Fukushima et al disclose in Figure 2 that the act of

informing an external node that the router has redundant routing facilities includes generating and transmitting a message including an identification of the router. Routers communicate link-state information to construct a link-state database 22, which includes router ID's, as shown in Figure 4. Refer to Column 6, lines 29-47.

However, Fukushima et al do not disclose that the message includes address information of the designated routing facility and address information of the standby routing facility.

Kelly discloses a method of allowing communication between a packet-switched data network and a circuit-switched data network, wherein a telephone number is resolved into the IP address of a gateway. Using the gateway IP address, a calling party can direct packets from a PSTN network to an IP network, and vice versa. The calling party is also provided with a list of IP address of other redundant, alternate gateways through which to route packets in case the primary gateway fails. Refer to Column 2, lines 49-53; Column 3, line 52 to Column 4, line 12; and Column 17, lines 21-34. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the message includes address information of the designated routing facility and address information of the standby routing facility; the motivation being so that the external node can use the address of the designated routing facility to route packets until a switchover occurs, after which the external node uses the address of the standby routing facility to route packets; thereby facilitating communication without loss of information.

Referring to claim 15, Fukushima et al disclose in Figure 2 that the method

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further comprises: e) if a failure of the designated routing facility is determined, then i) electing the standby routing facility as the designated routing facility. Refer to Column 7, lines 46-52.

However, Fukushima et al do not disclose: ii) informing the external node of the identify of the newly elected designated routing facility.

Kelly discloses a method of allowing communication between a packet-switched data network and a circuit-switched data network, wherein a telephone number is resolved into the IP address of a gateway. Using the gateway IP address, a calling party can direct packets from a PSTN network to an IP network, and vice versa. The calling party is also provided with a list of IP address of other redundant, alternate gateways through which to route packets in case the primary gateway fails. Refer to Column 2, lines 49-53; Column 3, line 52 to Column 4, line 12; and Column 17, lines 21-34. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include: ii) informing the external node of the identify of the newly elected designated routing facility; the motivation being so that in case the designated routing facility fails, the external node can use the new address of the alternate routing facility to route packets.

Referring to claims 20, 24 and 28, Fukushima et al disclose in Figure 1 a router (router 30) adapted to interact with an external router (router 10) having a designated routing facility (Figure 2, route calculation unit 11a) and a standby routing facility (Figure 2, route calculation unit 11b). Refer to Column 5, lines 53-59. As shown in Figure 2, the method comprises:

a) Accepting, from the external router, the identify of the designated routing facility. Refer to the rejection of claim 11.

b) Accepting, from the designated routing facility of the external router, network information. Route calculation unit 11a determines least cost paths throughout the network using the link-state database 22 and registers the shortest paths in the routing table 19. Refer to Column 6, lines 50-60. Route calculation unit 11a then sends a routing table to the forwarding process units 13 to be sent to other routers 30. Refer to Column 7, lines 42-45.

c) Using the network information accepted (before switchover) from the designated routing facility of the external router for determining routes. Route calculation unit 11a then sends a routing table to the forwarding process units 13 to be sent to other routers 30 for determining routes. Refer to Column 7, lines 42-45.

d) Accepting (after switchover), from the standby routing facility of the external router, network information, but not using it for determining routes. After receiving the network link-state information from the route calculation unit 11a, route calculation unit 11b fetches data from its link-state database 22, performs route calculations using SPF, and holds routing tables with the same content as route calculation unit 11a. Refer to Column 7, lines 39-45. Route calculation unit 11b does not exchange routing packets through forwarding process units 13 until switchover has occurred. Refer to Column 7, lines 30-34 and lines 46-52 and Column 9, lines 6-37.

Referring to claims 21 and 25, Fukushima et al disclose in Figure 2 that the method further comprises: e) storing the network information accepted from the standby

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routing facility of the external router. After switchover, route calculation unit 11b exchanges routing protocols with other routers 30 through the forwarding process units 13. The routers 30 therefore store the information received from the forwarding process units 13.

Referring to claims 22 and 26, Fukushima et al disclose that the method further comprises:

e) Accepting, from the external router, an indication that the designated routing facility has failed. Refer to Column 7, lines 46-52 and Column 8, lines 45-54.

f) Accepting, from the external router, an indication that the standby routing facility has been elected as the designated routing facility. Refer to Column 7, lines 46-52 and Column 8, lines 45-54.

g) Using path information from the newly elected designated routing facility. After switchover, route calculation unit 11b exchanges routing packets and routing tables through forwarding process units 13 to external routers 30. Refer to Column 7, lines 30-34 and lines 46-52 and Column 9, lines 6-37.

Referring to claims 23 and 27, Fukushima et al disclose that the method further comprises:

f) Accepting, from the external router, an indication that the designated routing facility has failed. Refer to Column 7, lines 46-52 and Column 8, lines 45-54.

g) Accepting, from the external router, an indication that the standby routing facility has been elected as the designated routing facility. Refer to Column 7, lines 46-52 and Column 8, lines 45-54.

h) Using the stored path information from standby routing facility that is now the newly elected designated routing facility. After switchover, route calculation unit 11b exchanges routing packets and routing tables through forwarding process units 13 to external routers 30. Refer to Column 7, lines 30-34 and lines 46-52 and Column 9, lines 6-37.

Referring to claim 30, Fukushima et al disclose in Figure 2 that the router further comprises: d) means (state monitor module 20 in route calculation unit 11b) for electing the standby routing facility as the designated routing facility if a failure of the designated routing facility is determined. Refer to Column 8, lines 45-54.

However, Fukushima et al do not disclose: e) means for informing the external node of the identify of the newly elected designated routing facility. Refer to the rejection of claim 15.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,049,524 to Fukushima et al in view of U.S. Patent No. 6,347,085 to Kelly, and in further view of U.S. Publication No. 2002/0021675 to Feldmann.

Fukushima et al do not disclose that the act of informing an external node that the router has redundant routing facilities uses an existing BGP message format.

Feldmann disclose that an autonomous system AS typically employs an interdomain routing protocol, such as BGP, to select paths between different autonomous systems. The interdomain reachability information combined with the intradomain information is used to construct a forwarding table. Refer to Sections 0022, 0032 and 0036. Therefore, it would have been obvious to one of ordinary skill in the art

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at the time the invention was made to include the act of informing an external node that the router has redundant routing facilities uses an existing BGP message format; the motivation being that the IS-IS protocol is a typical interdomain routing protocol used to create forwarding tables.


Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Ng whose telephone number is (571) 272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C. Ng CW
October 4, 2005


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